

An Overview of the Safe Drinking Water Act



Objectives

- Explain threats to drinking water
- Describe the hydrologic cycle and pathways of contamination
- Understand the history of drinking water regulation
- Describe the major SDWA programs

Threats to Drinking Water

Contaminants and Health Effects



Discussion

- What contaminants pose a public health threat to your daily water?
- Do threats from public and private water supplies differ?
- What are the effects of these potential health threats?



Contaminant Effects

- Acute health effects
- Chronic health effects
- Aesthetic concerns



Types of Pathogens

- Viruses (e.g., Norwalk virus, rotaviruses)
- Bacteria (e.g., *Shigella*, *E.coli*)
- Parasites, protozoa and cysts (e.g., *Giardia lamblia*, *Cryptosporidium*)

Bacteria

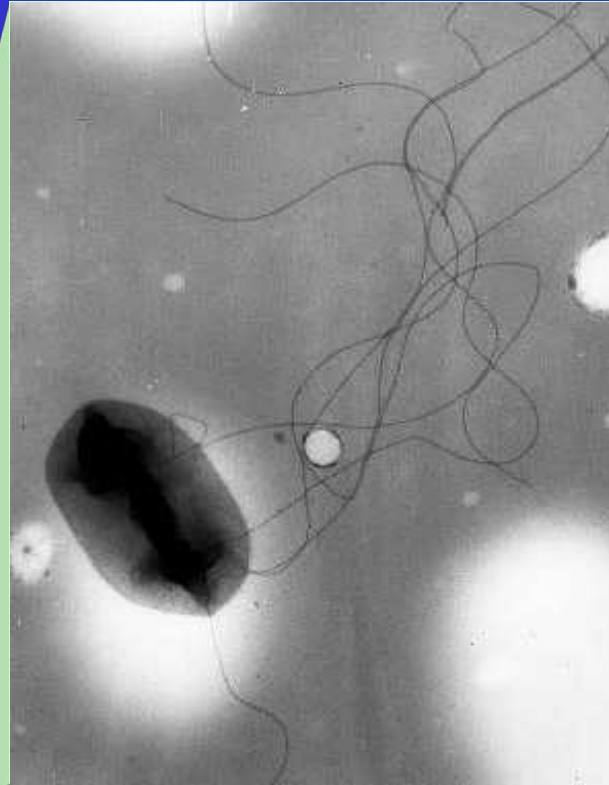


Photo: CDC. *E. coli* 0157:H7

Viruses

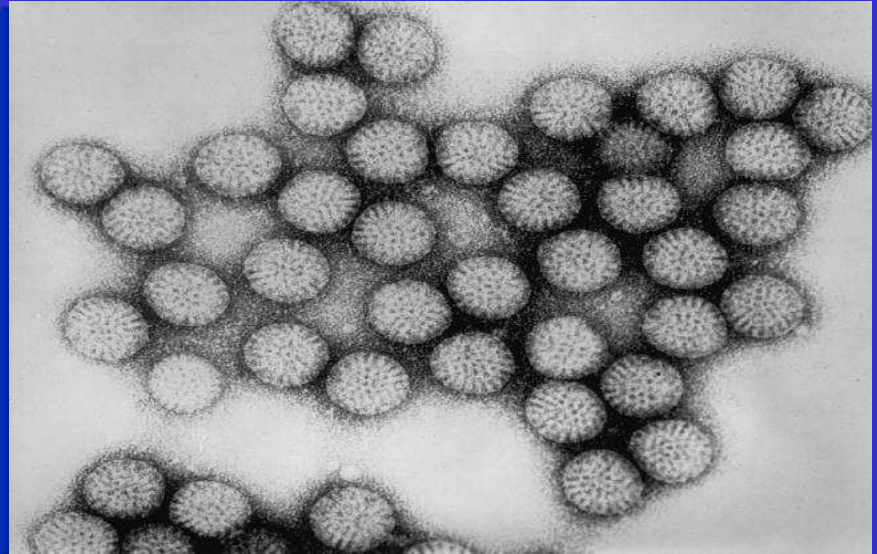
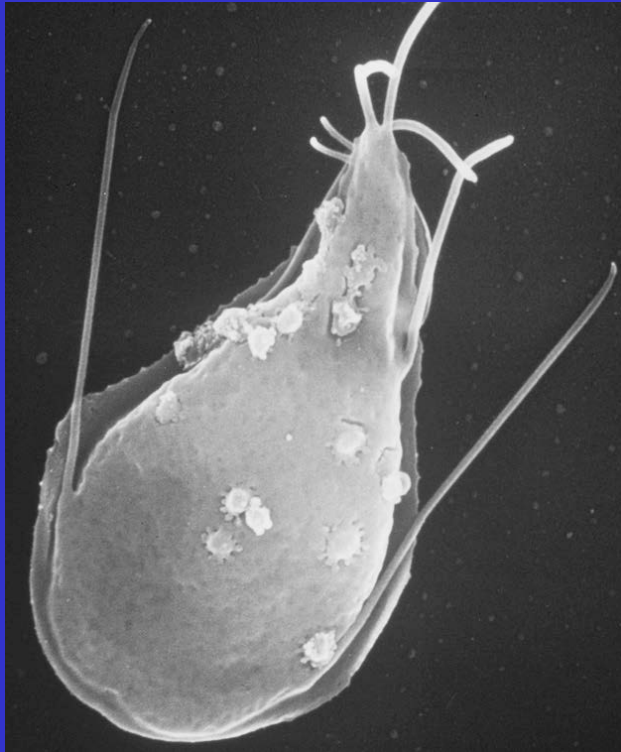


Photo: Rotavirus, ASM Digital Collection

Protozoa



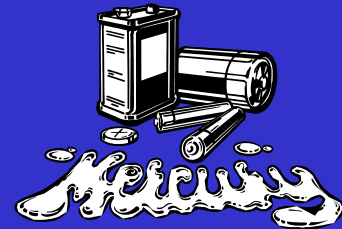
Giardia



Cryptosporidium

Types of Contaminants Causing Chronic Health Effects

- Volatile organic chemicals (VOCs)
- Inorganic chemicals (IOCs)
- Synthetic organic chemicals (SOCs)
- Radionuclides



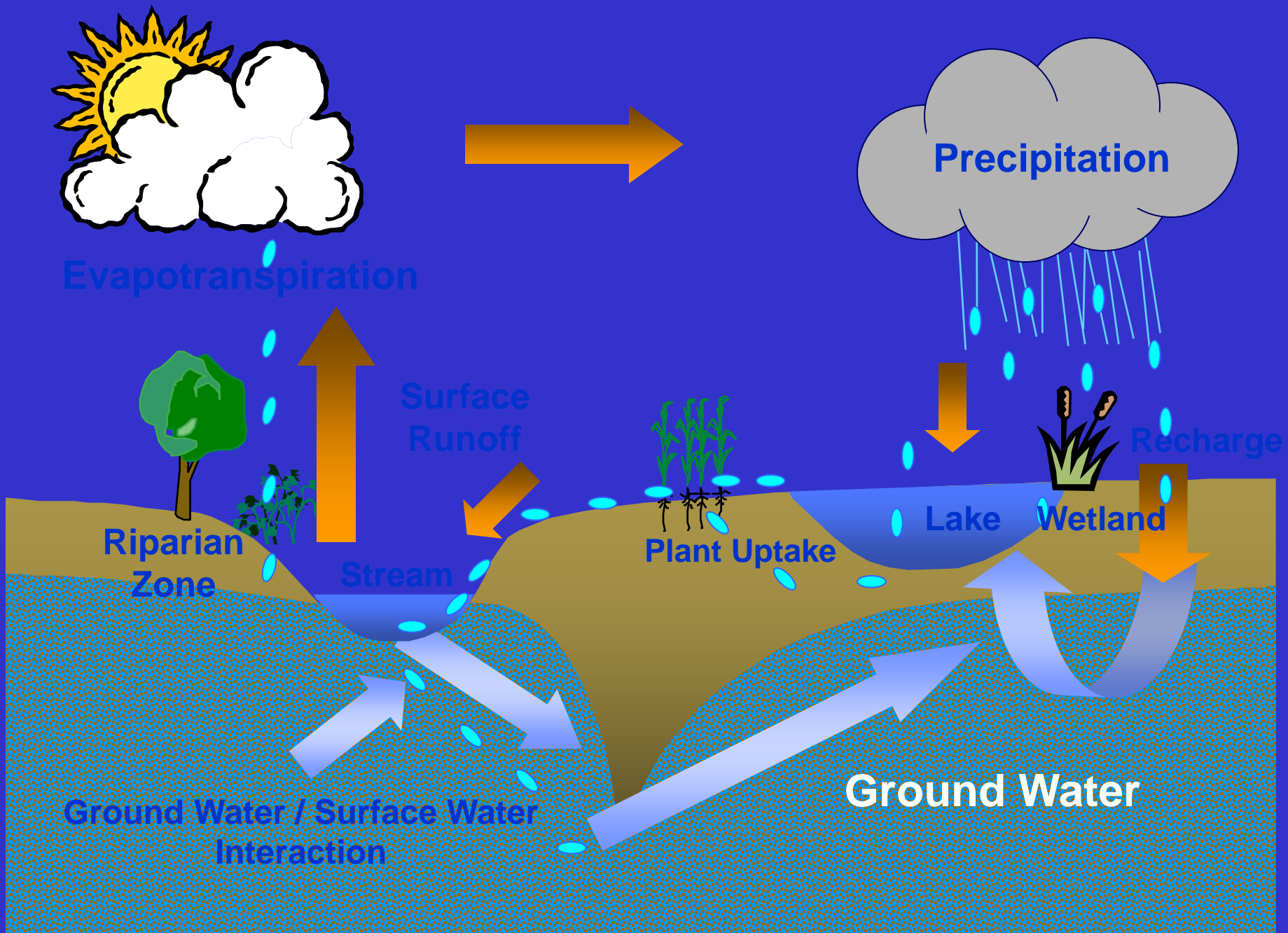
Discussion

- Where do microbiological and chemical contaminants come from?

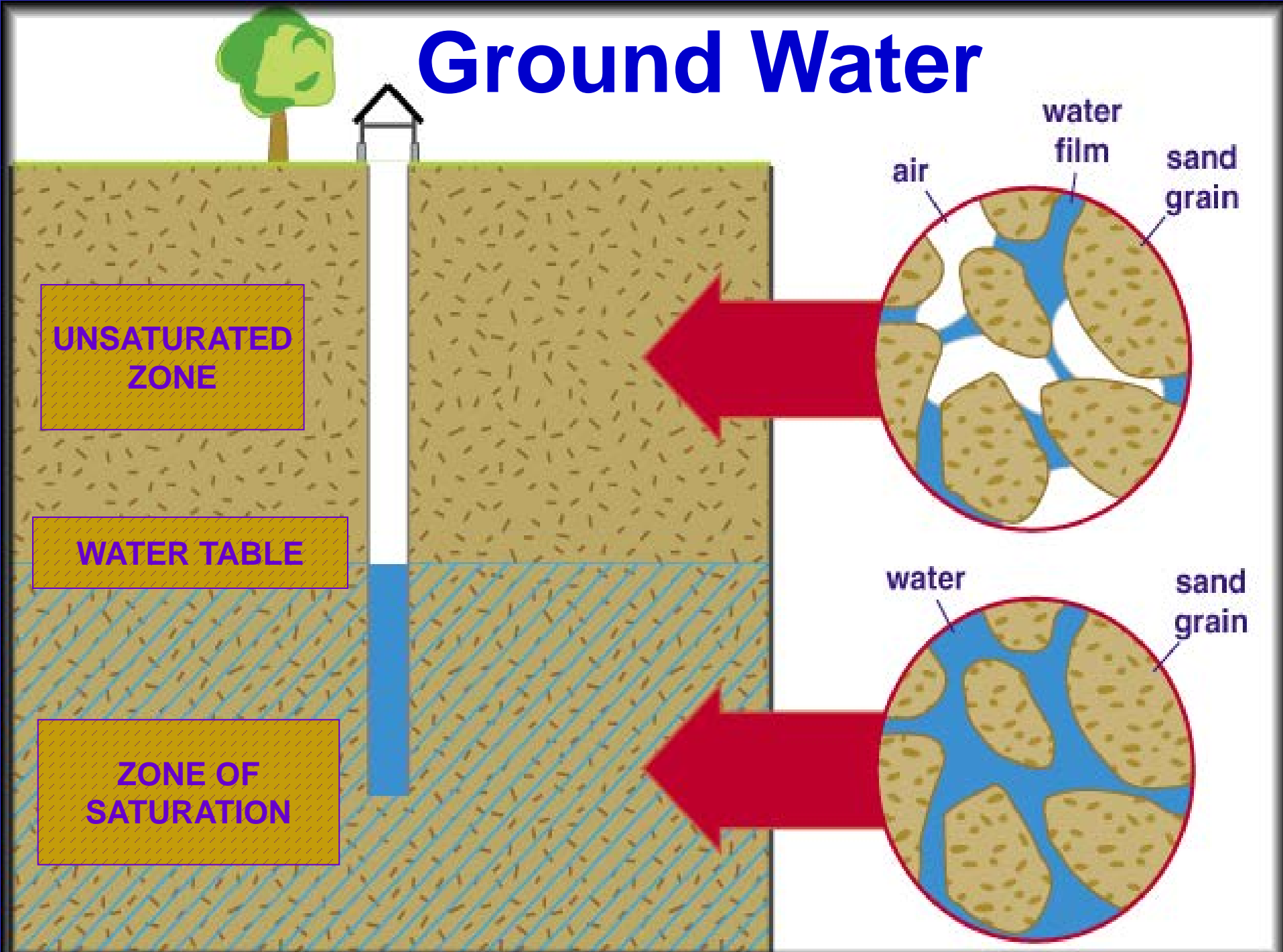


The Hydrologic Cycle, Sources of Drinking Water, and Pathways of Contamination





Ground Water



Discussion

- Name as many sources of drinking water as possible

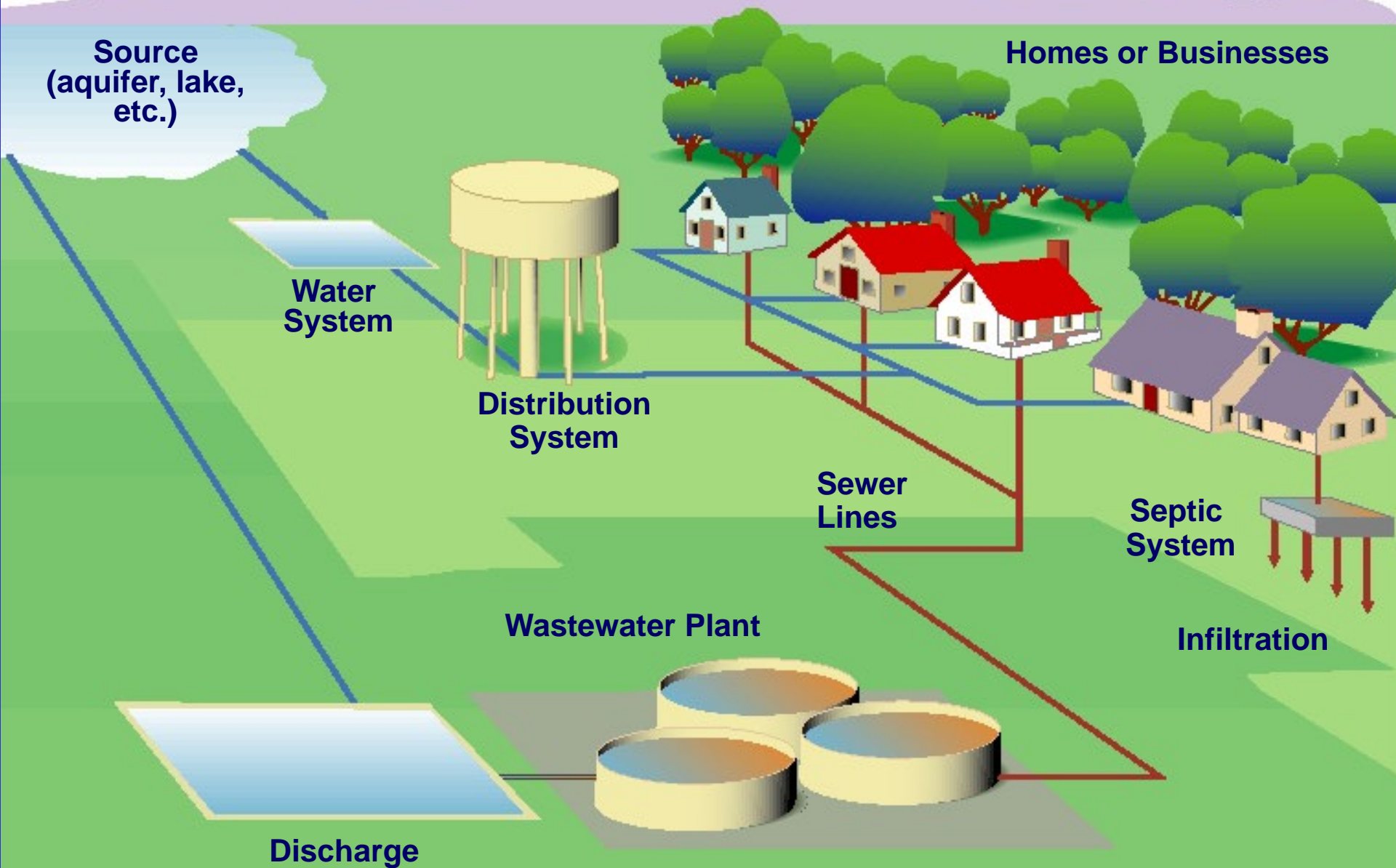


Sources of Drinking Water

- Surface water
- Ground water
- Ground water under the direct influence of surface water
- Desalinated sea water
- Rain water



The Drinking Water Cycle

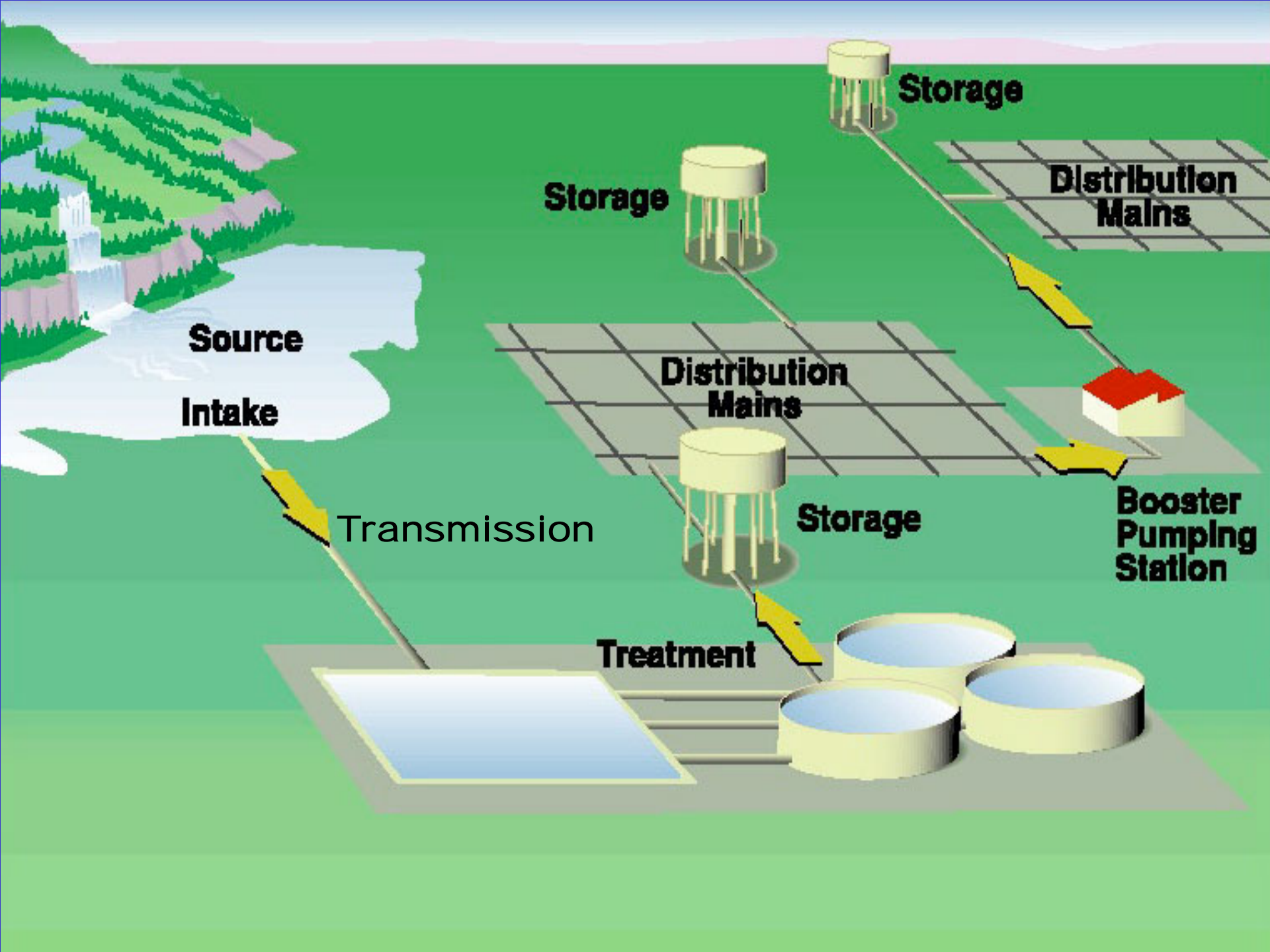


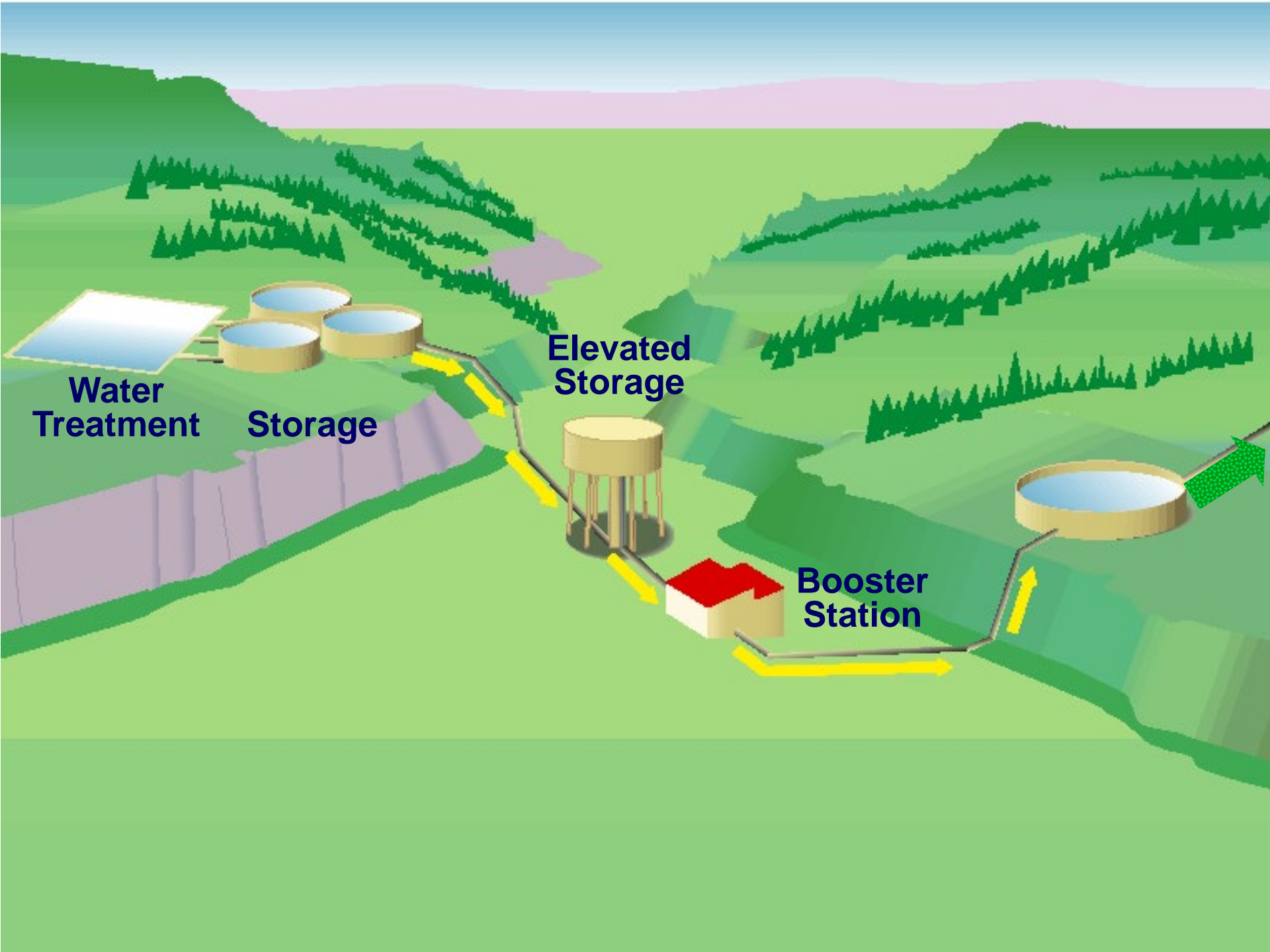
Sources of Contamination



What Is a Water System and How Is it Regulated?







Regulatory Distinctions Between Water Systems

A Water System

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graph TD; A["A Water System"] --> B["Not A Public Water System"]; A --> C["Public Water System"]; C --> D["Community Water System"]; C --> E["NonCommunity Water System"]; E --> F["NonTransient NonCommunity Water System"]; E --> G["Transient NonCommunity Water System"];
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Not A Public Water System

Public Water System

Community Water System

NonCommunity Water System

**NonTransient
NonCommunity Water
System**

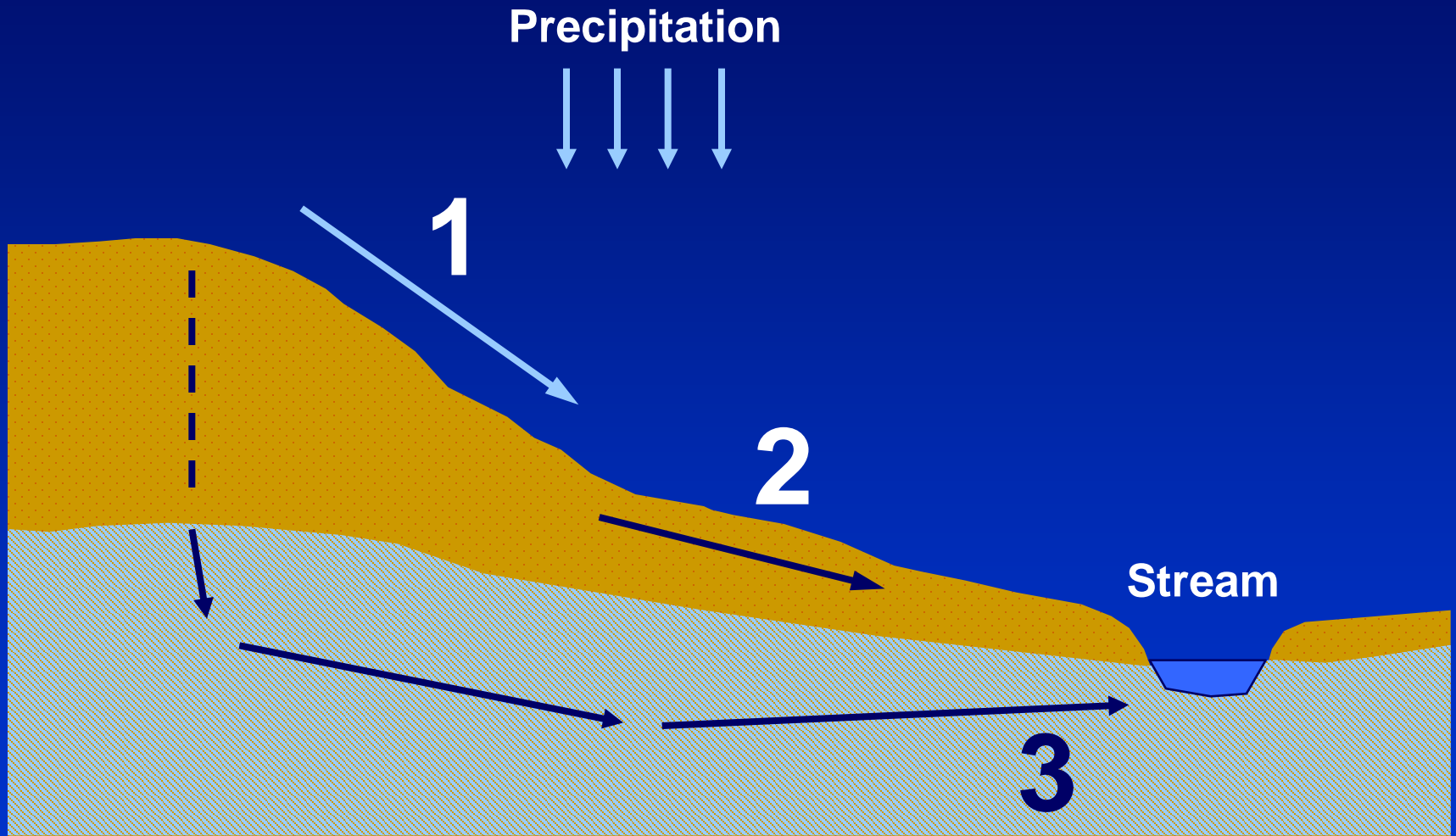
**Transient
NonCommunity Water
System**

Discussion

- Why divide water systems into the various classifications?
- Why only regulate systems serving 25 or more people?



Paths of Water Flow Within Watershed

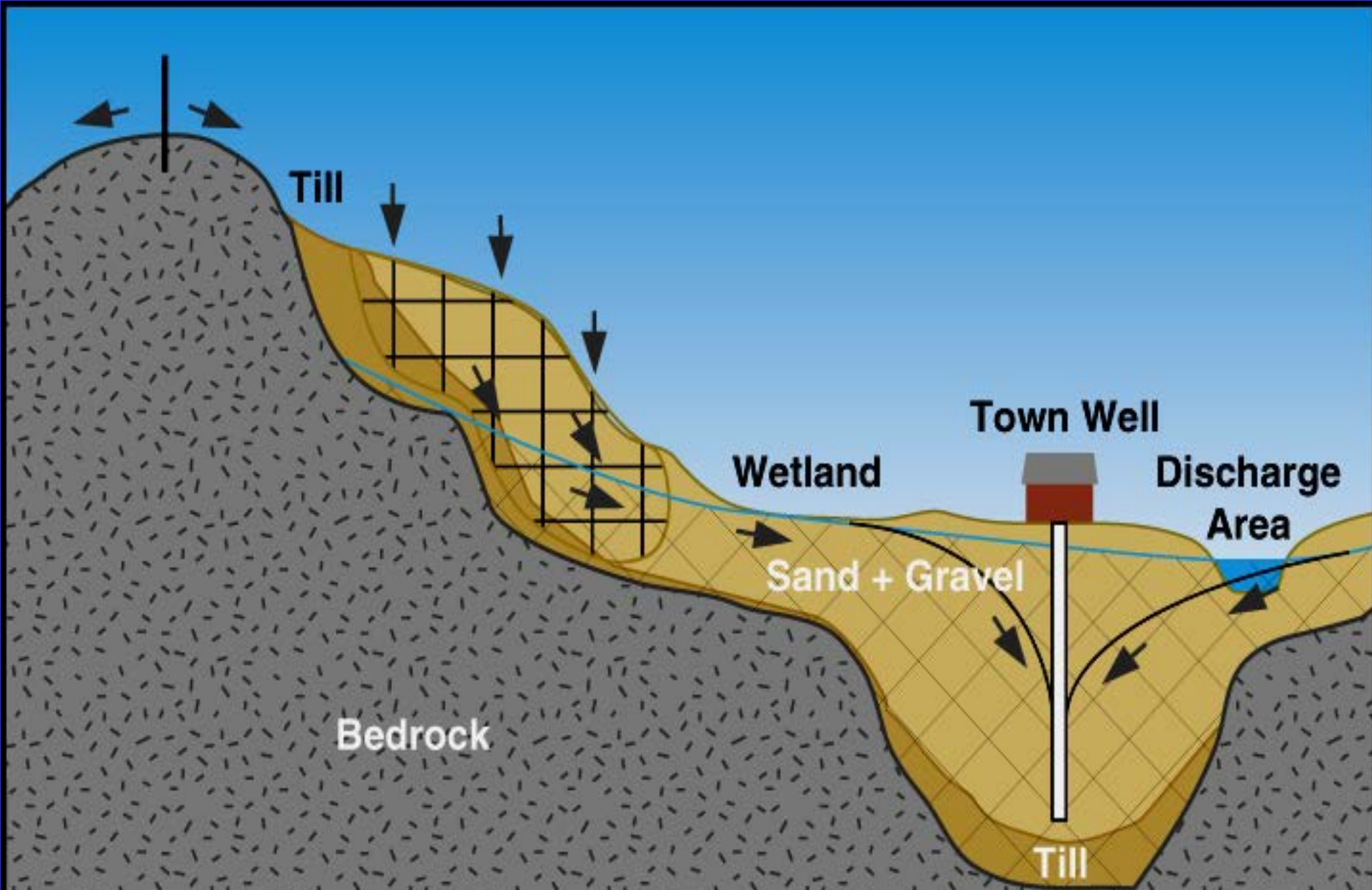


1. Overland Flow

2. Shallow Subsurface Storm Flow

3. Ground Water Flow

Determining The Areas To Be Protected



Capacity Development

- EPA assists States in developing financial, managerial and technical capacity of water systems
- States must have programs to
 - Ensure capacity of new systems
 - Help existing systems develop and maintain capacity

Consumer Confidence Reports

- Easy-to-understand explanations of drinking water standards and health effects
- Information on the quality of the water system's source and monitoring results
- Health effects information on any contaminant in violation of an EPA health standard
- Hotline number to address questions

SDWA Programs Today

- Protect public health through:
 - Contaminant standard setting
 - Source water protection
 - Underground injection control
 - Public water system supervision